

CLAIMS:

1. A pass through seat restraint tension sensing assembly for a seat restraint system in a vehicle
5 comprising:

a housing for allowing belt webbing of the seat restraint system to pass therethrough;

at least one spring disposed in said housing;
and

10 at least one magnet disposed in said housing;

a Hall effect sensor disposed in said housing and cooperable with said at least one magnet; and

a movable actuator disposed in said housing and cooperable with the belt webbing and said at least one
15 spring to move said at least one magnet relative to said Hall effect sensor to indicate a tension level in the seat restraint system.

2. A pass through seat restraint tension
20 sensing assembly as set forth in claim 1 including a plurality of springs cooperating with said actuator and said at least one magnet.

3. A pass through seat restraint tension
25 sensing assembly as set forth in claim 2 wherein at least one of said springs is located longitudinally on one side

of said actuator and at least another one of said springs is located longitudinally on the other side of said actuator.

5 4. A pass through seat restraint tension sensing assembly as set forth in claim 3 wherein said at least one of said springs is located longitudinally one half a distance of said at least another of said springs from a center axis of said actuator.

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5. A pass through seat restraint tension sensing assembly as set forth in claim 1 wherein said at least one spring is either one of a leaf spring and coil spring tuned to a predetermined force.

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6. A pass through seat restraint tension sensing assembly as set forth in claim 1 wherein said housing has a cavity.

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7. A pass through seat restraint tension sensing assembly as set forth in claim 6 including a plurality of magnets mounted on said actuator and disposed laterally with said Hall effect sensor therebetween.

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8. A pass through seat restraint tension sensing assembly as set forth in claim 6 wherein said

actuator extends laterally and is disposed in said cavity and has an arcuate upper surface adapted to engage the belt webbing.

5 9. A pass through seat restraint tension sensing assembly as set forth in claim 1 wherein said housing comprises an upper housing member and a lower housing member.

10 10. A pass through seat restraint tension sensing assembly as set forth in claim 9 wherein each of said upper housing member and said lower housing member has a projection extending laterally at each longitudinal end adapted to engage the belt webbing.

15 11. A pass through seat restraint tension sensing assembly as set forth in claim 9 including fasteners for securing said upper housing member and said lower housing member together.

20 12. A pass through seat restraint tension sensing assembly for a seat restraint system in a vehicle comprising:

an upper housing member and a lower housing
25 member cooperating with said upper housing member for

allowing belt webbing of the seat restraint system to pass therethrough;

at least one spring mounted on said lower housing member; and

5 at least one magnet mounted on said lower housing member;

a Hall effect sensor mounted on said lower housing member and cooperable with said at least one magnet; and

10 a movable actuator mounted on said lower housing member and cooperable with the belt webbing and said at least one spring to move said at least one magnet relative to said Hall effect sensor to indicate a tension level in the seat restraint system.

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13. A pass through seat restraint tension sensing assembly as set forth in claim 12 including a plurality of springs cooperating with said actuator.

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14. A pass through seat restraint tension sensing assembly as set forth in claim 13 wherein said springs are either one of a leaf spring and coil spring.

15. A pass through seat restraint tension
25 sensing assembly as set forth in claim 13 wherein at least one of said springs is located longitudinally on one side

of said actuator and at least another one of said springs is located longitudinally on the other side of said actuator.

5 16. A pass through seat restraint tension sensing assembly as set forth in claim 13 wherein said at least one of said springs is located longitudinally one half a distance of said at least another of said springs from a center axis of said actuator.

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 17. A pass through seat restraint tension sensing assembly as set forth in claim 12 wherein said lower housing member has a cavity.

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 18. A pass through seat restraint tension sensing assembly as set forth in claim 17 including a plurality of magnets mounted on actuator and spaced laterally with said Hall effect sensor therebetween.

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 19. A pass through seat restraint tension sensing assembly as set forth in claim 17 wherein said actuator extends laterally and is disposed in said cavity and has an arcuate upper surface adapted to engage the belt webbing.

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20. A seat restraint system for a vehicle comprising:

a seat restraint webbing;

a housing for allowing said seat restraint
5 webbing to pass therethrough;

a plurality of springs disposed in said housing;

and

a plurality of magnets disposed in said housing;

a Hall effect sensor disposed in said housing
10 and cooperable with said magnets; and

a movable actuator disposed in said housing and
cooperable with said seat restraint webbing and said
springs to move said magnets relative to said Hall effect
sensor to indicate a tension level in the seat restraint
15 system.